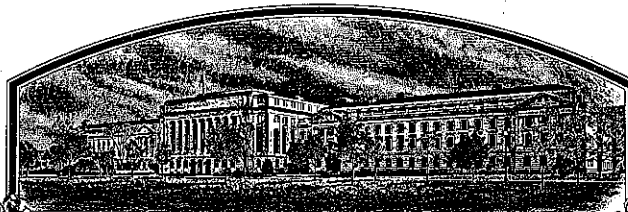


No.

9700008



# THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Dr. C. J. Konzak

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED, PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR PRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR USING IT FOR ANY OF THE ABOVE PURPOSES, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. IN THE UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS A CLASS OF SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS SPECIFIED BY THE OWNER OF THE VARIETY. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

WHEAT

'Memdu'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this thirtieth day of September in the year of our Lord one thousand nine hundred and ninety-seven.



Attest:  
*Morton D. E.*  
Commissioner  
Plant Variety Protection Office  
Agricultural Marketing Service

*Samuel J. Hinkley*  
Secretary of Agriculture

U.S. DEPARTMENT OF AGRICULTURE  
AGRICULTURAL MARKETING SERVICE  
SCIENCE DIVISION - PLANT VARIETY PROTECTION OFFICE

## APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions and information collection burden statement on reverse)

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a).

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S) (as it is to appear on the Certificate)  Dr. C. F. Konzak		2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER  PF93-1	3. VARIETY NAME  Memdu
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code, and Country)  Northwest Plant Breeding Co. 2001 Country Club Road Pullman WA 99163		5. TELEPHONE (include area code)  (509) 334-4404	<b>FOR OFFICIAL USE ONLY</b> PVPO NUMBER 97000008 FILING DATE Oct 10, 1996 FILING AND EXAMINATION FEE \$2450.00 DATE Oct 10, 1996 CERTIFICATION FEE \$300.00 DATE 12 August 1997
6. FAX (include area code)  (509) 334-5320		7. GENUS AND SPECIES NAME  Triticum Turgidum Turanicum	
8. FAMILY NAME (Botanical)  Gramineae		9. CROP KIND NAME (Common name)  Wheat Khorosan wheat	
10. IF THE APPLICANT NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION (corporation, partnership, association, etc.) (Common name)  Single proprietorship			
11. IF INCORPORATED, GIVE STATE OF INCORPORATION		12. DATE OF INCORPORATION	
13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS  Dr. C. F. Konzak NE 1725 Wheatland Dr Pullman WA 99163			14. TELEPHONE (include area code)  As above
15. FAX (include area code)			
16. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow instructions on reverse)			
a. <input checked="" type="checkbox"/> Exhibit A. Origin and Breeding History of the Variety b. <input checked="" type="checkbox"/> Exhibit B. Statement of Distinctness c. <input checked="" type="checkbox"/> Exhibit C. Objective Description of the Variety d. <input checked="" type="checkbox"/> Exhibit D. Additional Description of the Variety Photo e. <input checked="" type="checkbox"/> Exhibit E. Statement of the Basis of the Applicant's Ownership f. <input checked="" type="checkbox"/> Voucher Sample (2,500 viable untreated seeds or, for tuber propagated varieties verification that tissue culture will be deposited and maintained in a public repository) g. <input checked="" type="checkbox"/> Filing and Examination Fee (\$2,450), made payable to "Treasurer of the United States" (Mail to PVPO)			
17. DOES THE APPLICANT SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY, AS A CLASS OF CERTIFIED SEED? (See Section 83(a) of the Plant Variety Protection Act?) <input checked="" type="checkbox"/> YES (If "yes," answer items 18 and 19 below) <input type="checkbox"/> NO (If "no," go to item 20)			
18. DOES THE APPLICANT SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		19. IF "YES" TO ITEM 18, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED? <input checked="" type="checkbox"/> FOUNDATION <input checked="" type="checkbox"/> REGISTERED <input checked="" type="checkbox"/> CERTIFIED	
20. HAS THE VARIETY OR A HYBRID PRODUCED FROM THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETING IN THE U.S. OR OTHER COUNTRIES? <input checked="" type="checkbox"/> YES (If "yes," give names of countries and dates) <input type="checkbox"/> NO Test marketed in US and Germany for evaluation			
21. The applicant(s) declare that a viable sample of basic seed of the variety will be furnished with application and will be replenished upon request in accordance with such regulations as may be applicable, or for a tuber propagated variety a tissue culture will be deposited in a public repository and maintained for the duration of the certificate.  The undersigned applicant(s) is(are) the owner(s) of this sexually reproduced or tuber propagated plant variety, and believe(s) that the variety is new, distinct, uniform, and stable as required in Section 41, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act.  Applicant(s) is(are) informed that false representation herein can jeopardize protection and result in penalties.			
SIGNATURE OF APPLICANT (Owner(s))  Calvin Konzak dba Northwest Plant Breeding Co.		SIGNATURE OF APPLICANT (Owner(s))  Calvin Konzak dba Northwest Plant Breeding Co.	
NAME (Please print or type)  CALVIN F Konzak		NAME (Please print or type)  CALVIN F Konzak	
CAPACITY OR TITLE  Prop. NW. Plant Breeding Co.		CAPACITY OR TITLE  Prop. NW. Plant Breeding Co.	
DATE  10/7/96		DATE  10/7/96	

## Attachment to Application for plant Variety Protection Certificate (Form SD-470)

(Applicant: C. F. Konzak)

1. The Applicant is a professional plant breeder, specializing in wheat breeding. He developed soft and hard spring wheat, durum wheat and oat cultivars for Washington State University until his retirement in 1994. In 1982, with the approval of the WSU administration, he began private breeding research on durum wheats and oats, for which breeding at WSU was terminated for lack of funding. In 1982, he began accumulating germplasm stocks for his breeding program, made some crosses, and acquired needed equipment. In 1983-4, he was on Professional Leave in Austria, where he was able to further advance his breeding via cooperation with a local breeder. Following that period, he continued to advance his breeding program, emphasizing durum wheats, but was also interested in the genetics of various traits, including grain size. In 1982, he received a sample of a long kernel durum-like grain from a friend who is no longer in the area. The wheat apparently was a curiosity seeking a use, and was never grown commercially. The original stock was said then to have come from Israel. The wheat was evaluated for breadmaking, but was found to have traits more typical of durums.

a. Geneology: PF93-1 is an increase from a single line selection made in 1984 from among over 100 single spike progenies isolated from a bulk increase of this long kernel durum-like wheat grown by Dr. C. F. Konzak in Pullman, WA. At that time, the distinction of the wheat as *Triticum turgidum turanicum* was not recognized, but since then all of the available USDA accessions of *T. t. turanicum* and of *T. t. polonicum* have been grown for observation in Pullman nurseries.

2. The selected line was further increased in 1985 as ST85-27 and this lot was expanded in 1986 to about 20 lbs for possible breeder seed stock, although some crosses were made with the stock to study the inheritance of the long grain trait, and to transfer grain length genes to commercial durums. The line selected for the possible breeder seed stock, and germplasm use had long, amber, plump, vitreous grain and black awns. Awns of the spikes in the original introduction varied from black through grey to white. The selected stock was stored until 1993, when it was used for an increase production. The population grown from that seed lot was found to be comparatively uniform for grain size, grain shape, grain color and vitreousness, as well as for spike type and plant height. ST85-27 has black awns and hairy glumes. Because it appeared to be relatively uniform in overall features, and because it was of interest for commercial use, the lot was renamed PF93-1 in 1992, when Purity Foods, Inc., Okemos, MI. contracted with NPB for its increase and use. In 1993, the 20 lb lot of breeder seed was increased further at Pullman, WA. to approximately 2000 lbs, and about 1800 lbs were shipped to Brawley, CA for further multiplication over the 1993-94 winter season. However, in 1994, the Purity Foods management changed, and rights to the seed stock increase grown for Purity Foods by K-F Seeds, Inc. in Brawley, CA, during the 1993-4 winter, were acquired by NORCAN SEEDS, INC., Fisher Branch, MB, Canada. During 1994 and early 1995, all of the increase produced in CA was acquired by NORCAN SEEDS. Some additional production of seed stock was made by NORCAN, and some grain was test marketed for evaluation purposes. However, no seed stock was sold by NORCAN, nor has any seed been sold by them to date, or made available to others, except for testing. The only obvious variation noted in the variety is in the intensity of the black color development in the awns, which varies with environment for color development. Under favorable maturation conditions at Pullman, WA. awn color development is an intense black, but the awn color seems to be environmentally sensitive, such that in some years the awns may vary from grey to black.

16b. Distinctness: Although the USDA Small Grains Collection includes a moderate number of *T. t. turanicum* accessions, only one other cultivar (Q-77, Kamut), owned by Montana Flour and Grains, Ft. Benton MT. is known to have received a PVP Certificate. PF93-1 differs from QK-77 in its glume characters: the beak on the outer glumes of PF93-1 is more sharply extended, and the glume awn is often longer (2-5mm), and may be black or dark

grey colored. The outer glumes of QK-77 spikelets are less colored, and the shoulder below the beak is less sharply extended. Seedlings of PF93-1 are green, with hyaline coleoptiles, while those of QK-77 have red coleoptiles (in contradiction to that reported by Quinn). Anthers of QK-77 may also have anthocyanin pigmentation, since the two traits are often associated. Semolina produced from PF93-1 is more deeply yellow colored than that from QK-77. The basal internode of culms from QK-77 are solid, whereas those of PF93-1 are hollow. Phenol reaction of QK-77 grain is heterogeneous, with about 25% of grains showing a fawn color, about 50% of grains are brown, and about 25% are dark brown; whereas about 75% of the PF93-1 grains show a fawn color and about 25% are brown. Even more significant, the protein profiles of PF93-1 and QK-77 under sodium dodecyl sulfate polyacrylamide (SDS PAGE) electrophoresis are distinct (photocopy-attached). PF93-1 is slightly shorter in height than QK-77, its spikes are somewhat more tapered at the tips. Yield trials comparing the two under normal production conditions have not been carried out, because both cultivars are tall and subject to lodging under local production conditions. The glumes of PF93-1 are hairy like those of QK-77; the grain sizes of PF93-1 and QK-77 are similar, and the grains are equally vitreous, and with a characteristic "hump" due to compression within the glumes. QK-77 may be slightly earlier in maturity. Both cultivars appear to be "day neutral" as regards adaptation to production in Southern USA. The long grain trait is a characteristic of the turanicum subspecies of *T. turgidum*, and of *T. t. polonicum*. However, *T. polonicum* has very long, papery glumes; whereas all turanicums have almost durum-like glume traits.

16c. Objective description of the variety. PF93-1 (Memdu), is a variety of *Triticum turgidum turanicum*. It is tall (not a semidwarf), comparatively low tillering, and with moderately stiff straw. The spike tends to taper at the tip; awns are long and colored, with color intensity varying from grey to black, depending on the year and production environment. Awns appear not only on the outer florets but also often on the lemmas of the well-developed central florets of the spikes. The glumes are typically longer than those of durum, and the beaks of the outer glumes vary in length (2-4mm) from the bottom to the top of the spike, the shoulder on the outer glume is typically apiculate. The glumes are hairy, and often black colored at the tip, near the beak, depending somewhat on the environmental conditions favoring color expression. The grains are very long, over 10mm in length, typically vitreous, and of yellow or amber color. On the crease side, the grains may show a depression or a 'hump' on the dorsal side, somewhat dependent on the maturity conditions, and the extent of compression caused by the glumes in the spike. Spikelets are commonly with 4 florets, all producing long grains. Small sized grains seem limited to the tip of the spike.

16e. Dr. C. F. Konzak's basis for ownership is in the fact that PF93-1 originated as a selection from his plant breeding program. The selection was made from an introduction with variable characteristics acquired in the course of accumulating genetic resources for his research program. It did not derive from among accessions in the USDA Wheat Collection, based on comparisons made. However, some accessions in the USDA collection are similar in general appearance, but were later maturing than PF93-1 when grown in Pullman. Another similar sample was obtained in 1994 from the owner of a florist supply firm in Lewiston, ID. That sample was identified as King Tut. However, King Tut appears to differ from QK-77 and PF93-1 in a number of features, including protein profile under SDS-PAGE electrophoresis. The owner of the florist supply firm retired some time in 1994, and no address is available, so it can only be assumed that King Tut was being grown as an ornamental, and not for other purposes. King Tut is not the same as QK-77 or Kamut. PF93-1 was derived from a sample of seed given as germplasm in 1982 by a friend, but the specific details were not recorded and are no longer known.

## STEM INTERNODE LENGTH DATA

PF93-1 Length (inches). Tiller 1 is peduncle

	Tillers									
	1	2	3	4	5	6	7	8	9	10
1.	17.5	16.5	20	17	13.5	23	19.5	21.5	23	21
2.	8	9	8	8	4	8.5	8	8.5	7.5	8.5
3.	5.5	5.5	5.5	4.4	3.75	5				
4.	4	4	3.75	3	4	3				
5.	3	2.5	2.5	2	2.5	2				
	11	12	13	14	15	16	17	18	19	20
1.	21	22	19	22.5	19.5	22.5	24.5	20.5	25.5	24
2.	9	9	8	8	8	9.5	8.5	8.5	8.5	9
	21	22	23	24	25	26	27	28	29	30
1.	21	19	22	22	23	22	24	21	21	22
2.	9	8.5	9	8	8.5	8.5	9	9	9	9
	31	32	33	34	35	36	37	38	39	40
1.	23	22	23	24.5	23	22	21	17.5	17.5	23
2.	9	9	9	9	8.5	9.5	9	7.5	6.5	8
3.								5.5		
	41	42	43	44	45	46	47	48	49	50
1.	16	22.5	18.5	20	22	19.5	20.5	18.5	19	20
2.	8.5	8	7.5	8	5.5	8	8	8	6.5	9

AVG. 1. 20.6 in (51.5 cm)

2. 8.3 in (20.8)

3. 5 in (12.5 cm)

4. 3.6 (9 cm)

5. 2.4 (6 cm)

The upper portion only of the peduncle is solid

Culms for measurement were cut from field and some were incomplete. Averages are for those that were complete. All basal internodes are hollow.

## STEM INTERNODE LENGTH DATA FOR QK-77

## QK-77 (Kamut)

	1	2	3	4	5	6	7	8	9	10
1.	20	20	17	20.5	21	19	19	17	22.5	19.5
2.	7.5	8.5	9	9	9	8	8	7.5	9	8
3.	5.5	6.5	6	5.5	6	6	6.5	5	6	6.5
4.			5			4.5	5	4.5	3.5	4.5
	11	12	13	14	15	16	17	18	19	20
1.	21	19.5	16	20	19.5	19	19	20	18.5	21
2.	8	7.5	8	8.5	8	7.5	7	8.5	8	8
3.	5.5	6	5.5	6	5.5	5.5	6	5.5	5	5.5
4.	4.5	4.5	4.5		4.5		4.5			
5.			4				2.5			
	21	22	23	24	25	26	27	28	29	30
1.	21	19.5	21	20.5	18	21	21	16	19	19
2.	8	8.5	8.5	9	6	8	4.5	7	8	7
3.	6	5.5	6	6	4.5	6	4.5	6	6.5	6
4.			4					4.5		
	31	32	33	34	35	36	37	38	39	40
1.	21	21	19.5	21	19	21	21	22	20	21
2.	8	8	6	9	8	8	8.5	9.5	9	8
3.	5	5.5	4	6	7	6.5	5.5	6	7	6.5
4.					5		3			4.5

AVG. 1. 19.7 in (49.25 cm)

2. 8 (20 cm)

3. 5.8 (14.5 cm)

4. 4.4 (11 cm)

5. 3.3 (8.25 cm)

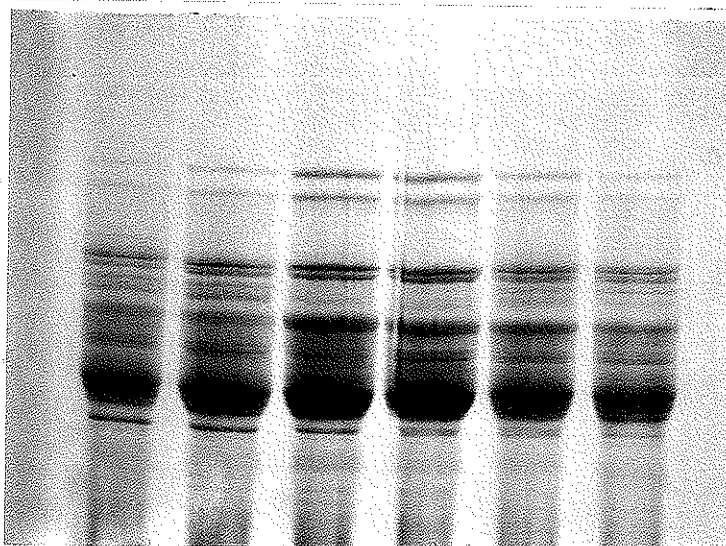
The upper portion of the peduncle is solid

Culms for measurement were cut from field and not complete for all stems

All basal stem internodes are solid

## Sodium Dodecyl Sulfate Polyacrylamide Gel Electrophoresis

## Analysis of Qk-77 vs PF93-1



Analysis includes also a selection identified as "King Tut".

The King Tut protein profile is shown on the left two columns. That of QK-77 (Kamut) is shown in the center two columns. PF93-1 proteins are shown on the right. One protein band, present in both King Tut and PF93-1, is missing in the profile of QK-77. The two similar protein bands of King Tut and PF93-1 may not be identical. PF93-1 appears to have another faint protein band between the next lower two intense bands. Greater definition of these bands would be possible under 2 dimensional--(SDSPAGE-electrofocusing) electrophoresis. However, It is clear that QK-77 and PF93-1 are different, as is indicated also by the morphological characteristics data.

OBJECTIVE DESCRIPTION OF VARIETY  
WHEAT (*Triticum* spp.)

NAME OF APPLICANT(S) Dr. C. F. Konzak	FOR OFFICIAL USE ONLY
ADDRESS (Street and No. or R.F.D. No., City, State, and Zip Code) Northwest Plant Breeding Co. 2001 Country Club Road Pullman WA 99163	PVPO NUMBER 97000008
	VARIETY NAME Memdu PF93-1
	TEMPORARY OR EXPERIMENTAL DESIGNATION

PLEASE READ ALL INSTRUCTIONS CAREFULLY: Place the appropriate number that describes the varietal character of this variety in the boxes below. Place a zero in the first box (e.g.    or   ) when number is either 99 or less or 9 or less respectively. Data for quantitative plant characters should be based on a minimum of 100 plants. Comparative data should be determined from varieties entered in the same trial. Royal Horticultural Society or any recognized color standard may be used to determine plant colors; designate system used: \_\_\_\_\_

Please answer all questions for your variety; lack of response may delay progress of your application.

1. KIND:

4

1=Common

2=Durum

3=Club

☒ 4=Other (SPECIFY) T. Turgidum Turanicum

2. VERNALIZATION:

1

1=Spring

2=Winter

3=Other (SPECIFY) \_\_\_\_\_

3. COLEOPTILE ANTHOCYANIN:

1

1=Absent

2=Present

4. JUVENILE PLANT GROWTH:

2

1=Prostrate

2=Semi-erect

3=Erect

5. PLANT COLOR (boot stage):

2

1 = Yellow-Green

2 = Green

3 = Blue-Green

6. FLAG LEAF (boot stage):

2

1 = Erect

2 = Recurved

1

1 = Not Twisted

2 = Twisted

7. EAR EMERGENCE:

Number of Days Earlier Than None

\*

0  2

Number of Days Later Than QK-77 (Kamut)

\*

8. ANTHR COLOR:

1

1 = YELLOW

2 = PURPLE

9. PLANT HEIGHT (from soil to top of head, excluding awns):

2  0

cm Taller Than Medora

\*

1  0

cm Shorter Than QK-77 (Kamut)

\*

## 10. STEM:

## A. ANTHOCYANIN

☐ 1 = Absent      2 = Present

## B. WAXY BLOOM

☐ 1 = Absent      2 = Present

## C. HAIRINESS (last internode of rachis)

☐ 1 = Absent      2 = PresentD. INTERNODE (SPECIFY NUMBER) 2, 3, 4 and 5☐ 1 = Hollow      2 = Semi-solid      3 = Solid

## E. PEDUNCLE

☐ 2 = Absent      2 = Present☐ 21 cm LengthRECEIVED  
USDA-ARS-PVPO

96 OCT 10 A9:41

Upper portion of 1 Peduncle solid

## 11. HEAD (at Maturity):

## A. DENSITY

☐ 2 = Lax      2 = Middense      3 = Dense

## B. SHAPE

☐ 4 = Tapering      2 = Strap      3 = Clavate      4 = Other (SPECIFY) Strap-tapering

## C. CURVATURE

☐ 2 = Erect      2 = Inclined      3 = Recurved

## D. AWNEDNESS

☐ 4 = Awnless      2 = Apically Awnletted      3 = Awnletted      4 = Awned

## 12. GLUMES (at Maturity):

## A. COLOR

☐ 3 = White      2 = Tan      3 = Other (SPECIFY) white with grey-black tips

## B. SHOULDER

☐ 6 = Wanting      2 = Oblique      3 = Rounded      4 = Square      5 = Elevated      6 = Apiculate

## C. BEAK

☐ 3 = Obtuse      2 = Acute      3 = Acuminate

## D. LENGTH

☐ 3 = Short (ca. 7mm)      2 = Medium (ca. 8mm)      3 = Long (ca. 9mm)

## E. WIDTH

☐ 3 = Narrow (ca. 3mm)      2 = Medium (ca. 3.5mm)      3 = Wide (ca. 4mm)

## 13. SEED:

## A. SHAPE

☐ 2 = Ovate      2 = Oval      3 = Elliptical

## B. CHEEK

☐ 1 = Rounded      2 = Angular

## C. BRUSH

☐ 1 = Short      2 = Medium      3 = Long☐ 1 = Not Collared      2 = Collared

## D. CREASE

☐ 1 = Width 60% or less of Kernel  
2 = Width 80% or less of Kernel  
3 = Width Nearly as Wide as Kernel☐ 3 = Depth 20% or less of Kernel  
2 = Depth 35% or less of Kernel  
3 = Depth 50% or less of Kernel

## 13. SEED: (continued)

## E. COLOR

☐ 2

1 = White

2 = Amber

3 = Red

4 = Other (SPECIFY) \_\_\_\_\_

## F. TEXTURE

☐ 1

1=Hard

2=Soft

## G. PHENOL REACTION (see instructions):

☐

1 = Ivory

2 = Fawn

3 = Light Brown

4 = Dark Brown

5 = Black

## 14. DISEASE: (0=Not Tested; 1=Susceptible; 2=Resistant; 3=Intermediate; 4=Tolerant)

PLEASE INDICATE THE SPECIFIC RACE OR STRAIN TESTED

Stem Rust (*Puccinia graminis* f. sp. *tritici*)☐ 2

Local races

Stripe Rust (*Puccinia striiformis*)☐ 2

Local races

Tan Spot (*Pyrenophora tritici-repentis*)☐ 0Halo Spot (*Selenophoma donacis*)☐ 0

Septoria nodorum (Glume Blotch)

☐ 0

Septoria avenae (Speckled Leaf Disease)

☐ 0

Septoria tritici (Speckled Leaf Blotch)

☐ 0Scab (*Fusarium* spp.)☐ 0

"Black Point" (Kernel Smudge)

☐ 4

Barley Yellow Dwarf Virus (BYDV)

☐ 0

Soilborne Mosaic Virus (SBMV)

☐ 0

Wheat Yellow (Spindle Streak) Mosaic Virus

☐ 0

Wheat Streak Mosaic Virus (WSMV)

☐ 0

Other (SPECIFY) \_\_\_\_\_

☐

Other (SPECIFY) \_\_\_\_\_

☐

Other (SPECIFY) \_\_\_\_\_

☐Leaf Rust (*Puccinia recondita* f. sp. *tritici*)☐ 2

Local races

Loose Smut (*Ustilago tritici*)☐ 0Flag Smut (*Urocystis agropyri*)☐ 0Common Bunt (*Tilletia tritici* or *T. laevis*)☐ 0Dwarf Bunt (*Tilletia controversa*)☐ 0Karnal Bunt (*Tilletia indica*)☐ 0Powdery Mildew (*Erysiphe graminis* f. sp. *tritici*)☐ 2

Local races

"Snow Molds"

☐ 0Common Root Rot (*Fusarium*, *Cochliobolus* and *Bipolaris* spp.)☐ 0Rhizoctonia Root Rot (*Rhizoctonia solani*)☐ 0Black Chaff (*Xanthomonas campestris* pv. *translucens*)☐ 0Bacterial Leaf Blight (*Pseudomonas syringae* pv. *syringae*)☐ 0

Other (SPECIFY) \_\_\_\_\_

☐

Other (SPECIFY) \_\_\_\_\_

☐

Other (SPECIFY) \_\_\_\_\_

☐

Other (SPECIFY) \_\_\_\_\_

☐

15. INSECT: (0=Not Tested; 1=Susceptible; 2=Resistant; 3=Intermediate; 4=Tolerant)

PLEASE SPECIFY BIOTYPE (where needed)

Hessian Fly (*Mayetiola destructor*)

☐ 0

Other (SPECIFY) \_\_\_\_\_

☐ 0

Stem Sawfly (*Cephus* spp.)

☐ 0

Other (SPECIFY) \_\_\_\_\_

☐ 0

Cereal Leaf Beetle (*Oulema melanopa*)

☐ 0

Other (SPECIFY) \_\_\_\_\_

☐ 0

Russian Aphid (*Diuraphis noxia*)

☐ 0

Other (SPECIFY) \_\_\_\_\_

☐ 0

Greenbug (*Schizaphis graminum*)

☐ 0

Other (SPECIFY) \_\_\_\_\_

☐

Aphids

☐ 1

Other (SPECIFY) \_\_\_\_\_

☐

16. ADDITIONAL INFORMATION ON ANY ITEM ABOVE, OR GENERAL COMMENTS:

See Supplement

9700008

We recently received a sample of your variety of Tetraploid grain; I believe it will be marketed under the name "Memdu".

We milled the product and found that it produced a highly desirable flour which can be used, similar to the Durum wheats, in a wide variety of whole grain and semolina style pastas.

The product, when baked, proved to be superior to most durumms we have tried. As expected, considerable care had to be taken with the dough in order to produce bread with marketable volume. As with many specialty grains, this product can produce marketable specialty breads in the hands of a dedicated and skilled baker.

[From a letter from Purity Foods, Inc.  
to the applicant.]  
AAA 23 July 1997

U.S. DEPARTMENT OF AGRICULTURE  
AGRICULTURAL MARKETING SERVICE  
SCIENCE AND TECHNOLOGY DIVISION - PLANT VARIETY PROTECTION OFFICE

EXHIBIT E  
STATEMENT OF THE BASIS OF OWNERSHIP

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995.

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S)  Dr. Calvin F. Konzak	2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER  PF93-1	3. VARIETY NAME  Memdu
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code, and Country)  Northwest Plant Breeding Co. 2001 Country Club Road Pullman WA 99163	5. TELEPHONE (include area code) (509) 334-4404	6. FAX (include area code) (509) 334-5320
7. PVPO NUMBER		
8. Does the applicant own all rights to the variety? Mark an "X" in appropriate block. If no, please explain.  <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		
9. Is the applicant (individual or company) a U.S. national or U.S. based company? If no, give name of country <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		
10. Is the applicant the original breeder? If no, please answer the following:  a. If original rights to variety were owned by individual(s): Is (are) the original breeder(s) a U.S. national(s)? If no, give name of country <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO  b. If original rights to variety were owned by a company: Is the original breeder(s) U.S. based company? If no, give name of country <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		
11. Additional explanation on ownership (If needed, use reverse for extra space):		

## PLEASE NOTE:

Plant variety protection can be afforded only to owners (not licensees) who meet one of the following criteria:

1. If the rights to the variety are owned by the original breeder, that person must be a U.S. national, national of a UPOV member country, or national of a country which affords similar protection to nationals of the U.S. for the same genus and species.
2. If the rights to the variety are owned by the company which employed the original breeder(s), the company must be U.S. based, owned by nationals of a UPOV member country, or owned by nationals of a country which affords similar protection to nationals of the U.S. for the same genus and species.
3. If the applicant is an owner who is not the original breeder, both the original breeder and the applicant must meet one of the above criteria.

The original breeder may be the individual or company who directed final breeding. See Section 41(a)(2) of the Plant Variety Protection Act for definition.

Public reporting burden for this collection of information is estimated to average 10 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Agriculture, Clearance Officer, OIRM, AG Box 7630, Jamie L. Whitten Building, Washington, D.C. 20250. When replying, refer to OMB No. 0581-0055 and form number in your letter.

Under the PRA of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

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To file a complaint, write the Secretary of Agriculture, U.S. Department of Agriculture, Washington, D.C. 20250, or call (202) 720-7327 (voice) or (202) 720-1127 (TDD). USDA is an equal employment opportunity employer.